

**FACT SHEET FOR NPDES PERMIT WA-000054-0**

**FACILITY NAME – Goldendale Aluminum**

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## INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

<b><u>GENERAL INFORMATION</u></b>	
Applicant	Goldendale Aluminum
Facility Name and Address	Goldendale Aluminum, 85 John Day Dam Road, Goldendale, WA 98620
Type of Facility:	Primary Aluminum Reduction
SIC Code	3334
Discharge Location	Columbia River, 1 mile upstream from John Day Dam at river mile 216.7 Latitude: 45° 43' 38" N                      Longitude: 120° 40' 51" W.
Water Body ID Number	WA-CR-1020

## **BACKGROUND INFORMATION**

### *DESCRIPTION OF THE FACILITY*

History. The site was originally owned by Harvey Aluminum and was sold to Martin Marietta Aluminum Inc. in 1971, prior to construction of the aluminum plant. Martin Marietta operated the facility from November 1971 to January 1985. Commonwealth Aluminum took over operation of the facility from January 1985 to February 1987, at which time the plant closed. The aluminum plant was re-opened by Columbia Aluminum in August 1987 and later sold to a private party now operating the facility as Goldendale Aluminum Company. A portion of the site, adjacent to the Columbia River, is owned by the Corps of Engineers and leased to Goldendale Aluminum Company. Production of aluminum at the site, located on a 7,000 acre parcel of land began in November 1971 with the startup of potlines 1 and 2 (cells A and B). A third potline also referred to as C and D cells came on-line in November 1981.

Industrial Process. The Goldendale facility includes primary aluminum smelting, carbon paste plant, and casting operations. On an annual basis, production capacity is approximately 178,000 tons of hot molten aluminum metal; 178,000 TPY direct water chilled extrusion billet and sheet ingot, and foundry ingot and molten metal; and 88,000 TPY of anode briquettes.

Ecology has already approved a simple cycle natural gas fired turbine energy project which would have discharged cooling water and site runoff into the aluminum smelter treatment system. The estimated flow volume ranged from .2 to .3 mgd. This additional flow was not anticipated to negatively impact treatment system capability or performance. Subsequent changes to energy costs have made the simple cycle project uneconomical. A combined cycle natural gas fired turbine energy project is currently undergoing permitting review. The combined cycle project is not expected to have a negative temperature impact on discharge effluent because most of the water used for cooling will be evaporated. Because the turbine project cooling water is taken from the aluminum plant wastewater, the net discharge volume to the wastewater treatment system will be reduced. The greatest evaporative loss will be during the critical late summer/fall period when high ambient river temperatures are prevalent.

DISCHARGE OUTFALL. Goldendale has one discharge location, outfall 001 that empties directly into the Columbia River. The outfall is a 30-inch diameter coated steel pipe which splits into three ports. The main outfall enters the river at a 70-degree angle to the river flow and extends about 295 feet from the shoreline before branching into three 24-inch diameter coated steel pipes. The three pipes terminate in 8-inch diameter ports. The downstream arm is approximately 95 feet long. The upstream arms are approximately 60 and 40 feet long, respectively. The final diffuser depth is approximately thirty (30) feet below the river surface. The discharge outfall is located nearly one mile upstream from the John Day Dam at river mile 216.7.

Wastewater Treatment System. Goldendale discharges wet air pollution control process wastewater, contact and noncontact cooling water, sanitary wastewater, and stormwater runoff through outfall 001. During the past two years, the long-term average discharge volume was 7.2 million gallons per day (MGD) with the single highest daily maximum discharge volume of 10.4 MGD. Of the 7.2 MGD, approximately 0.2 MGD is derived from wet air pollution and sanitary

treatment wastestreams. The remaining 7.0 MGD comes from noncontact and contact cooling water processes. The sanitary wastewater is treated using a package plant activated sludge system prior to being released and commingled with the other wastewater sources. The combined process wastewater, contact and noncontact cooling wastewaters, and treated sanitary wastewater are passed through a 10-acre series of settling ponds prior to being discharged into the Columbia River. The hydraulic retention time of the settling pond system is between twenty-four (24) and forty-eight (48) hours. Pollutants include total suspended solids (TSS), aluminum, fluoride, oil & grease, antimony, nickel, and benzo(a)pyrene.

#### *PERMIT STATUS*

The previous permit for this facility was issued on **June 27, 1990**. An application for permit renewal was submitted to the Department in December 1994. An updated application was submitted on May 10, 2000.

#### *SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

The facility last received an inspection in July 2001. The facility was found to be in overall compliance with the terms and conditions of their permit

During the history of the previous permit, the Permittee has remained in compliance based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department.

#### *WASTEWATER CHARACTERIZATION*

The proposed wastewater discharge is characterized for the following regulated parameters:

Table 1: Wastewater Characterization for final discharge at Outfall 001 over July 1998 through July 2000 period. Values are 2 year averages of daily maximum and monthly average values as reported in monthly monitoring report.

Parameter	Mass Loading (lbs/day) except for pH
TSS	9.4 daily max, 0 monthly avg. after netting; 192 daily max, 73 monthly avg. before netting; 809 daily max, 485 monthly avg. in intake water.
Aluminum	5.2 daily max, 1.6 monthly avg.
Fluoride	137 daily max, 63 monthly avg. after netting; 116 daily max, 67 monthly avg. before netting; 10 daily max, 8 daily avg. in intake water.
Oil & Grease	15.1 daily max, 6.5 monthly avg.
Antimony	0 daily max, 0 monthly avg.
Nickel	0 daily max, 0 monthly avg.
B(a)P	.022 daily max, .008 monthly avg.

Parameter	Mass Loading (lbs/day) except for pH
pH	7 Minimum 9.7 maximum

### **PROPOSED PERMIT LIMITATIONS**

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

All known, available, and reasonable treatment (AKART) methods to control pollutants in the applicant's wastewater shall be used. Ecology has adopted EPA's BCT and BAT economic tests as a major factor in the AKART analysis.

If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Clean Water Act for a toxic pollutant, and that standard or prohibition is more stringent than any limitation upon such pollutant in the permit, the Department shall institute proceedings to modify or revoke and reissue the permit to conform to the more stringent effluent standard or prohibition.

### *SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be

conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

#### NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

#### NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

#### NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

#### ANTIDegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.



## CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

## MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

## DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Columbia River which is designated as a Class A receiving water in the vicinity of the outfall. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

## SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	20 degrees Celsius maximum or incremental increases above background as allowed by WAC 173-201A-130(20)
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTU above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge do not exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the Plumes model. The dilution factors have been determined from an ENSR study done for Goldendale in February 24, 1997 and are presented below.

	Acute	Chronic
Aquatic Life	13.4:1	69.6:1
Human Health, Carcinogen		81:6:1
Human Health, Non-carcinogen		69.6:1

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of surface water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Columbia River is the seven day average low river flow with a recurrence interval of ten years (7Q10). The Ambient data reported below is used to assess the impact of the effluent discharge on the receiving water. The source of the data is identified by the associated note number below.

Parameter	Value used
7Q10 low flow	79000 cfs note 1
Velocity	0.28 ft/sec (harmonic mean current velocity) note 1
Depth	106 feet (during harmonic mean flow) note 1
Width	4113 feet note 1
Temperature	21° C (90 <sup>th</sup> upper percentile) note 1
pH (high)	8.2 note 2
Dissolved Oxygen	9.5 to 13.6 mg/L note 2
Total Ammonia-N	0.002 to 0.04 mg/L note 2
Fecal Coliform	41/100 mL dry weather ( >100/100 mL storm related)

	note 2
Conductivity	96 to 191 uS/cm note 2
Hardness	64 mg/l as CaO <sub>3</sub> note 4
Salinity	0.0 ppt Note 3
Turbidity	57 NTU note 2
Lead	< 1 ug/l (total recoverable) note 2
Copper	3.3 ug/L (total recoverable) note 2
Zinc	4.8 ug/L (total recoverable) note 2

Note 1. Values taken from the Dilution Ratio/Mixing Zone Study prepared by ENSR in February 1997 (Document # 1774-010-500)

Note 2. United States Geological Survey (USGS) National Storm Water Quality Network (NASQAN) database for the Warren, Oregon site (USGS site 14128910) on the Columbia River

Note 3. No salinity is assumed for this portion of the Columbia. It is too far upstream to be affected by marine tidal influences.

Note 4. Value taken from Discharge and Receiving Water Study prepared by ENSR in December 1998 (Document # 1774-011-400)

The impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform, chlorine, ammonia, metals, and other toxics were determined as shown below, using the dilution factors at critical conditions described above.

BOD<sub>5</sub>--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water. The aluminum process does not introduce a carbon load to the effluent so there is no reason to believe BOD would have any influence on the receiving water. The BOD loading from the sanitary effluent is also insignificant.

Temperature- Goldendale will be required to submit a study proposal on the effect of effluent temperature on the receiving water. The study proposal and possible study is Ecology's response to the EPA's TMDL temperature initiative for the Columbia River. Portions of the Columbia River are listed on EPA's 303d list for temperature. Current federal and state guidance maintains that if the effect of the effluent on receiving water temperature is in violation of the water quality standards for temperature set forth in WAC 173-201A-130(20), no dilution zone will be allowed. The current guidance position means that the Permittee's discharge would have to meet the water quality criteria at the point of discharge into the receiving water. The 3-year average inlet and outfall temperature from January 1997-December 1999 was 55.8 F (13.2 C) and 63.6 F (17.6 C) respectively. The highest monthly average temperature for this period was 75 F (23.9 C) in August 1998. The temperature impact of the combined cycle turbine project was considered in formulating the temperature study requirement.

pH--Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitations for pH were placed in the permit.

Turbidity—Turbidity is considered to be a negligible issue. The facility takes in water from the Columbia which has a higher solids loading than the effluent discharged back to the Columbia.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following chemicals were determined to be used or manufactured by the Permittee and could potentially be present in the effluent: Chlorine, chromium, copper, zinc, cyanide, benzo(a) Pyrene, Benzo (a) Fluoranthene, Benzo (k) Fluoranthene, Chrysene, Dibenzo (ah) Anthracene, Indeno Pyrene, Naphthalene, Benzo (ghi) perylene, Benzo (a) anthracene, Acenaphthene, Acenaphthylene, Anthracene, 3-4-Benzofluoranthene, Phenanthrene, and Pyrene. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit. Ecology concludes there is not a reasonable potential to exceed water quality standards. However, the permit still contains limits and monitoring requirements for benzo(a)pyrene based on federal guidelines.

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal.

The Permittee may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Metals criteria may be adjusted on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge.

Metals criteria may also be adjusted using the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

#### WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC<sub>50</sub>, EC<sub>50</sub>, IC<sub>25</sub>, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

The WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water acute toxicity, and the Permittee will not be given an acute WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that acute toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard". The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

Chronic toxicity was also measured during effluent characterization in the previous permit term in 1991-92. No chronic toxicity was demonstrated during the characterization study but no subsequent chronic monitoring has been done. Since the original chronic characterization study is over eight years old it is necessary to repeat the chronic characterization study. At the time of the original characterization study there was no dilution ratio available so an NOEC was determined on the sample without a dilution equivalent to the ACEC in the dilution series. The repeated study will also provide results more directly related to the Permittee's dilution zone.

## HUMAN HEALTH

Human health based criteria were promulgated for the state by EPA in its' National Toxics Rule (Fed. Reg., V. 57, No. 246, Tuesday, December 22, 1992). Human health criteria have been established for a subset of the chemicals referred to as priority pollutants. Permittees must submit priority pollutant analysis results as part of a permit renewal application. The Department has evaluated whether the Permittee's effluent has a reasonable potential to violate the human health criteria (See Appendix C). Based upon review of the priority pollutant analysis results, the Department believes that, except for arsenic, there is not a reasonable potential to violate the human health criteria. The reasonable potential for arsenic is uncertain. A sample of outfall effluent submitted to an outside laboratory by the Permittee indicated arsenic (as total arsenic) present at 1 ppb. Evaluating arsenic analysis is complicated because it is the inorganic

form only that is of concern. Refer to the paragraphs below for further discussion about arsenic. For the reasons set forth below, Ecology is proposing monitoring for arsenic during this permit term. Evaluation of compliance with human health criteria will be an ongoing activity and the Department's current position may change in the future depending on effluent characteristics.

In 1992 the USEPA adopted risk-based arsenic criteria for the protection of human health for the State of Washington. The criterion for marine waters is 0.14 µg/L inorganic arsenic, and is based on exposure from fish and shellfish tissue ingestion. The freshwater criterion is 0.018 µg/L, and is based on exposure from fish and shellfish tissue and water ingestion. These criteria have caused confusion in implementation because they differ from the drinking water maximum contaminant level (MCL) of 50 µg/L, which is not risk-based, and because the human health criteria are sometimes exceeded by natural background concentrations of arsenic in surface water and ground water.

In Washington, when a natural background concentration exceeds the criterion, the natural background concentration becomes the criterion, and no dilution zone is allowed. This could result in a situation where natural groundwater or surface water used as a municipal or industrial source-water would need additional treatment to meet numeric effluent limits even though no arsenic was added as waste. Although this is not the case for all dischargers, we do not have data at this time to quantify the extent of the problem.

A regulatory mechanism to deal with the issues associated with natural background concentrations of arsenic in groundwater-derived drinking waters is currently lacking. Consequently, the Water Quality Program, at this time, has decided to use a three-pronged strategy to address the issues associated with the arsenic criteria. The three strategy elements are:

**1. Pursue, at the national level, a solution to the regulatory issue of groundwater sources with high arsenic concentrations causing municipal treatment plant effluent to exceed criteria.** The upcoming revision of the MCL for arsenic offers a national opportunity to discuss how drinking water sources can affect NPDES wastewater dischargers. This discussion should focus on developing a national policy for arsenic regulation that acknowledges the risks and costs associated with management of the public exposure to natural background concentrations of arsenic through water sources.

**2. Additional and more focussed data collection.** The Water Quality Program will in some cases require additional and more focussed arsenic data collection, will encourage or require dischargers to test for source water arsenic concentrations, and will pursue development of a proposal to have Ecology's Environmental Assessment Program conduct drinking water source monitoring as well as some additional ambient monitoring data. At this time, Washington NPDES permits will contain numeric effluent limits for arsenic based only on treatment technology and aquatic life protection as appropriate.

**3. Data sharing.** Ecology will share data with USEPA as they work to develop new risk-based criteria for arsenic and as they develop a strategy to regulate arsenic.



## SEDIMENT QUALITY

The Department has not yet promulgated freshwater aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. The Permittee was required to conduct sediment analysis during the 1990-1995 permit term. The analysis results have been submitted to Ecology and are pending review. The proposed permit contains a placeholder condition that allows revisiting the sediment issue if necessary in the future.

## *GROUND WATER QUALITY LIMITATIONS*

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water (GW). Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100). The Goldendale facility has potentially impacted groundwater from past and current leakage through two surface impoundments referred to as the east surface impoundment (ESI) and the west surface impoundment (WSI). The ESI was formed in 1973 to accommodate waste material removed from effluent settling ponds. Material was placed in the ESI until 1978. Thereafter until 1985 the ESI received effluent from the primary air scrubbers from smelter lines one and two. The ESI was closed in 1987 and covered with a 50 mil geotextile layer overlaid with rock. The WSI was built in 1983 to accommodate effluent from wet air emission scrubbers associated with a third smelter line. The major pollutants in this effluent stream are fluoride and sulfate. The WSI is proposed to be closed in the near future. In response to Order DE 00WQIS-867A-02, Goldendale is modifying the wastewater treatment system such that the wet air scrubber bleedwater will be treated for fluoride removal prior to discharge. GW monitoring wells were installed in the later half of the 1980s. Initial monitoring was done quarterly. A closure plan was submitted for the WSI in 1995 under the authority of WAC 173-304. GW wells were required because the west surface impoundment exceeds the 2-million-gallon capacity threshold cited in WAC 173-304-430. Currently upgradient and downgradient GW wells are monitored quarterly for static water level, pH, conductivity, TOC, sulfate, fluoride, chloride, sodium, iron, manganese, free cyanide, total cyanide, and phenols. The 1995 closure plan states that GW monitoring will continue at least 20 years after closure and at least until concentrations of indicator constituents stabilize.

Groundwater also may have been affected by site operational practices. Ecology first issued a surface water study requirement in the 1985 NPDES permit issued to Commonwealth Aluminum. The study was required in response to concerns raised by the National Marine Fisheries Service (NMFS) of possible delayed salmonid migration due to fluoride loading to the Columbia River. The study requirements were carried forward into the 1990 NPDES permit. Study results showed combined fluoride loading at several pounds per day from groundwater sources referred to as the East and West rivulets which seep from the hillside and ultimately reach the Columbia River through overland flow. In contrast the fluoride concentration in the Columbia is such that many thousands of pounds of fluoride flow by the Goldendale plant every day. There has been no observed flow from the East Rivulet since 1990. The reduction in flow coincides with changes in operational practices at the Goldendale facility. Fluoride concentrations in the East Rivulet had varied between 6 and 9 mg/l. Fluoride concentrations in the West Rivulet have been between 3.8 and 5 mg/l. The fluoride concentration in the Columbia River averages .21 mg/l both upstream and downstream from the East and West Rivulet discharge points.

Stormwater retention basin sediment sampling was also required. Results indicate the potential for elevated PAH concentrations in some sampled areas. PAH as B(a)P has been and will continue to be monitored in the final effluent. B(a)P monitoring results of the final effluent do not suggest stormwater basin sediment as a source of PAHs in the final effluent. Further sampling may occur if and when site operations or use of the retention basin cease. Such sampling would be part of a clean closure assessment.

Ecology is not proposing to carry the current study requirement forward into the next permit term. The study has accomplished its objective. Further monitoring can be conducted through the annual Class II inspections.

## PROPOSED EFFLUENT LIMITS AND MONITORING REQUIREMENTS

The Nonferrous Metals Manufacturing (40 CFR Part 421) guidelines were used as an initial basis for establishing the proposed effluent limits for the facility. The resulting limitations derived from 40 CFR Part 421 were then examined against historical effluent monitoring results. The following BAT building block processes were used in developing the technology based effluent limitations:

40	CFR	Part 421.23	(b)	BAT Anode Contact Cooling and Briquette Quenching
40	CFR	Part 421.23	(m)	BAT Potroom Wet Air Pollution Control
40	CFR	Part 421.23	(n)	BAT Potline SO <sub>2</sub> Emissions Wet Air Pollution Control
40	CFR	Part 421.23	(o)	BAT Degassing Wet Air Pollution Control
40	CFR	Part 421.23	(q)	BAT Direct Chill Casting Contact Cooling

The permit limits are based on the highest continuous twelve-month production average during July 1998 through July 2000. Production values used for BAT analysis included: 29 million lbs per month of aluminum metal produced, 23 million lbs per month of aluminum metal direct chilled (DC) cast, and 14.5 million lbs per month of anode paste produced.

The proposed effluent limitations, monitoring requirements, and other requirements for outfall 001, the roof scrubber wastewater treatment plant (WTP), and the sanitary discharge are described below and presented below in Table 1. The basis for the proposed limitations for respective pollutants is described below. One historical change to basic monitoring resulting from the energy shortfall is the acknowledgement of curtailed production. No monitoring is required if no discharge is occurring. Ecology proposes to consider monitoring changes on a case-by-case basis when significant production cutbacks occur.

### Sanitary Waste stream prior to Commingling with other Outfall 001 Wastewaters:

The proposed BOD<sub>5</sub>, total suspended solids (TSS), pH, and fecal coliform requirements were carried over from the existing permit. The basis for the proposed limitations for all parameters other than chlorine residual and the 30-day BOD average is WAC 173-221-040. BPJ is the basis for the chlorine residual limit and for the 30-day average BOD limit. The chlorine residual limitation is carried forward for 18 months. During this time, the Permittee will need to select an alternative method of disinfection or determine modifications to the existing system to comply with current technology capabilities. *Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991* is the basis for the proposed lower chlorine residual limitations. The Permittee may select a method of disinfection which does not rely on chlorine. If so the permit will be modified at such time as necessary. The BPJ based BOD limit is more stringent than the allowance specified in WAC 173-221. The requirement to monitor ammonia was not carried over. The ammonia monitoring requirement was originally required in response



to a failure of a fish bioassay done in 1989. Since then more than two dozen fish bioassays have passed. The historical ammonia (NH<sub>3</sub>) monitoring data from 1998 through 1999 indicates the average sanitary effluent ammonia concentration is .45 mg/l. This translates to a final effluent concentration of 0.1 mg/l based on an average sanitary discharge volume of 0.03 MGD and a process effluent discharge volume of 7 mgd. Given an acute dilution factor of 13 the receiving water concentration would be about .008 mg/l as NH<sub>3</sub>. This is much less than the acute 1-hour un-ionized ammonia criterion of .26 mg/l.

Secondary Roof Scrubber Wastewater Treatment Plant (WTP): The treatment process utilized at the WTP consists of lime, settle, and filter (LS & F) technology. EPA has determined LS & F treatment technology as BAT for nonferrous metals manufacturing. The WTP consists of a 2000 gallon reaction vessel designed to precipitate the fluoride out as calcium fluoride followed by clarification, and effluent sand filters. Clarifier sludge is managed through either drum or vacuum filters. Sludge is disposed as solid waste at the Rabanco Regional Solid Waste Landfill in Roosevelt, Washington. The existing permit established limits and required monitoring for TSS, fluoride, and benzo(a)pyrene. Goldendale has requested and meets the qualifications for reduced monitoring for benzo(a)pyrene. The benzo(a)pyrene effluent limitation in the existing permit was established when the paste plant was discharging contact cooling water into the WTP. The B(a)P limitations were developed using BAT guidelines. Goldendale states that this discharge has ceased. Goldendale requests elimination of this limitation. The average of the monthly averages and daily maximum benzo(a)pyrene mass emission rates from July 1998 through July 2000 were 0.001 lbs and .003 lbs respectively. The monthly average and daily maximum benzo(a)pyrene mass emission rate limitations are 0.03 lbs and 0.06 lbs respectively. The proposed permit reduces the benzo(a)pyrene monitoring frequency from daily to 1/week as allowed by Ecology's monitoring guidance for good performance.

The 2001-2006 permit term will reflect modifications made to the WTP to treat fluoride from the SO<sub>2</sub> scrubbers. Order DE 00WQIS-867A-02 established 15 mg/l as the long-term fluoride concentration design goal for WTP effluent. The existing permit contains mass loading limits for fluoride based on July 1, 1983 NSPS guidelines. The mass loading limits are not carried forward into the proposed permit because of the changes made to the WTP. Monitoring for fluoride is proposed. Fluoride monitoring and mass loading limits are still being proposed for the final effluent. Mass loading or concentration limits for fluoride in the WTP effluent may be established in the future based on a review of monitoring results following modifications to the WTP.

Outfall 001: Effluent limitations have been included for the following pollutant parameters: aluminum, TSS, fluoride, oil & grease, benzo(a)pyrene, antimony, nickel, and pH. Monitoring requirements were also included for arsenic, temperature, flow, precipitation (measured as inches of rainfall), and production. The rationale employed in determining effluent limitations for each pollutant parameter is given below.

Aluminum - The proposed permitted monthly average and daily maximum aluminum effluent limitations are carried forward from the existing permit and are 18 lbs and 40 lbs respectively. The proposed limitations are based on the BAT guidelines specified in 40 CFR Part 421.23 as amended at 52 FR 25556, July 7, 1987. Stormwater allowances were not included in the final effluent limitations. In addition, since Goldendale uses Columbia River water as their intake water, Goldendale may deduct the mass of aluminum present in river water from their final discharge loading. Goldendale has requested and meets the qualifications for reduced monitoring for aluminum. The average of the monthly averages and daily maximum aluminum mass emission rates from July 1998 through July 2000 were 1.6 lbs and 5.2 lbs respectively. The proposed permit reduces the aluminum monitoring frequency from daily to 1/week as allowed by Ecology's monitoring guidance for historical good performance.

Total Suspended Solids (TSS) - The limits proposed for TSS are based on BPJ. This was also the basis for the TSS limits in the current permit. The current permit includes a building block component based on 1983 NSPS standards. This component was derived from NSPS standards but is based on BPJ as the three cell lines that comprise the Goldendale smelter all became operational prior to 1982. The current and proposed limits reflect operational history. The current limits are based on historical monitoring results with an additional buffer allowance. The current permit includes a monthly average and daily maximum TSS limitation of 250.0 and 500.0 lbs/day, respectively. These numbers appear to have been derived by roughly doubling the historical long-term average and 30-day maximum value. This was a reduction from the monthly average and daily maximum limits established in the 1985-1990 permit term of 500 and 1500 lbs/day respectively. The proposed limits also reflect recent monitoring results but do not include the buffer allowance. Review of the recent monitoring indicates that the buffer allowance is not necessary. The proposed daily maximum allowance of 411 lbs reflects the highest TSS pre-netting result monitored during the 1999-2000 timeframe. The proposed monthly average of 103 lbs reflects the highest TSS pre-netting monthly average monitored during this same timeframe.

Outfall TSS loading during 1998 through 2000 has typically been around 0 lbs/day. This is because Goldendale is allowed to deduct, from their final effluent loading, the amount of TSS present in their intake water which comes from the Columbia River. As reported in their NPDES renewal application, the intake water TSS long term average was 515 lbs/day. Goldendale has requested and meets the qualifications for reduced monitoring for TSS. The averages of the monthly averages and daily maximum pre-netting final effluent TSS mass emission rates from January 1999 through December 2000 were 73 lbs and 192 lbs respectively. The proposed permit reduces the TSS monitoring frequency from daily to 3/week as allowed by Ecology's monitoring guidance for historical good performance. No TSS allowance is proposed for the addition of cooling water blowdown or possible stormwater received from a proposed cogeneration facility to be situated adjacent to the aluminum refinery. Any TSS introduced from these sources is considered negligible. The final settling pond is rich in aquatic vegetative growth which is believed to be the primary source of TSS in the final discharge. Ecology believes that the proposed limits reflect normal system operation and will encourage continued treatment system operational diligence.

Fluoride - The existing monthly average (160 lbs/day) and daily maximum (350 lbs/day) fluoride effluent limitations are proposed to be carried forward through the next permit term. The proposed limitations are based on the BAT guidelines specified in 40 CFR Part 421.23 as amended at 52 FR 25556, July 7, 1987. The current permit includes a building block component based on 1983 NSPS standards. This component was derived from NSPS standards but is based on BPJ as the three cell lines that comprise the Goldendale smelter all became operational prior to 1982. The current and proposed limits reflect operational history. Goldendale has demonstrated the ability to comply with the existing limitations so the anti-backsliding provision of 40 CFR Part 122.44(l) requires that proposed permit limits be at least as stringent as the existing limitations. Stormwater allowances were not included in the final effluent limitations. In addition, since Goldendale uses Columbia River water as their intake water, Goldendale may deduct the mass of fluoride present in river water from their final discharge loading. Fluoride concentrations of 0.2 - 0.3 mg/l are typical in Columbia River water near the John Day Dam area. The 0.2 - 0.3 mg/l corresponds to 14.0 to 21.0 lbs/day of fluoride at an intake volume of 8.5 MGD. Goldendale has requested and meets the qualifications for reduced monitoring for

fluoride. The averages of the monthly averages and daily maximum pre-netting final effluent fluoride mass emission rates from January 1999 through December 2000 were 67 lbs and 116 lbs respectively. The proposed permit reduces the fluoride monitoring frequency from daily to 3/week as allowed by Ecology's monitoring guidance for historical good performance.

Oil & Grease – The current oil and grease limitations are proposed to be discontinued in this permit renewal effort. BPJ was used in the 1990-1995 permit period in developing the monthly average and daily maximum oil & grease effluent limitations of 150.0 and 350.0 lbs/day, respectively. These values were derived based on a flow volume of 8.5 MGD and an assumed effluent monthly average concentration of 2.0 mg/l and a daily maximum concentration of 5.0 mg/l respectively. The historical monthly average oil and grease final effluent concentration has been 6.5 lbs/day. The historical average of the reported final effluent daily maximum values has been 15.1 lbs/day. BPJ is again the basis for the proposed effluent requirements except that oil and grease limits have been discontinued while monitoring has been retained.

Ecology believes that Permit Condition S4 (Operation and Maintenance) provides a basis of authority for Ecology to investigate and even take enforcement should the final effluent oil and grease concentrations increase from historical levels due to factors under the control of the Permittee. From this perspective the historical effluent oil and grease concentrations become a much more restrictive "limit" than the current mass limitations. Monitoring results reported in the monthly DMRs will be reviewed and evaluated on a case-by-case basis.

Goldendale has requested and meets the qualifications for reduced monitoring for oil and grease. The average of the monthly averages and daily maximum oil and grease mass emission rates from July 1998 through July 2000 were 6.5 lbs and 15.1 lbs respectively. The proposed permit reduces the oil and grease monitoring frequency from daily to 1/week as allowed by Ecology's monitoring guidance for historical good performance.

Benzo(a)pyrene or B(a)P - The proposed monthly average and daily maximum B(a)P effluent limitations are carried forward from the existing permit and are 0.05 lbs/day and 0.10 lbs/day respectively. The proposed limitations are based on the BAT guidelines specified in 40 CFR Part 421.23 as amended at 52 FR 25556, July 7, 1987. Stormwater allowances were not included in the final effluent limitations. Goldendale has requested and meets the qualifications for reduced monitoring for B(a)P. The average of the monthly averages and daily maximum B(a)P mass emission rates from July 1998 through July 2000 were 0.008 lbs and 0.022 lbs respectively. The proposed permit reduces the B(a)P monitoring frequency from daily to 1/week as allowed by Ecology's monitoring guidance for historical good performance.

Antimony -. The proposed monthly average and daily maximum antimony effluent limitations are carried forward from the existing permit and are 5.6 lbs/day and 12.6 lbs/day respectively. The proposed limitations are based on the BAT guidelines specified in 40 CFR Part 421.23 as amended at 52 FR 25556, July 7, 1987. Stormwater allowances were not included in the final effluent limitations. Antimony has not been measured above the laboratory detection limit during the July 1998 through July 2000 timeframe. Goldendale has requested and meets the qualifications for reduced monitoring for antimony. The proposed permit reduces the antimony monitoring frequency from daily to 1/week as allowed by Ecology's monitoring guidance for historical good performance.

Nickel - The proposed monthly average and daily maximum nickel effluent limitations are carried forward from the existing permit and are 2.4 lbs/day and 3.6 lbs/day respectively. The proposed limitations are based on the BAT guidelines specified in 40 CFR Part 421.23 as amended at 52 FR 25556, July 7, 1987. Stormwater allowances were not included in the final effluent limitations. Nickel has not been measured above the laboratory detection limit during

the July 1998 through July 2000 timeframe. Goldendale has requested and meets the qualifications for reduced monitoring for nickel. The proposed permit reduces the nickel monitoring frequency from daily to 1/week as allowed by Ecology's monitoring guidance for historical good performance.

Arsenic – Refer to the discussion on Human Health Based Criteria presented previously in this Fact Sheet for the reasoning behind proposing arsenic monitoring.

Temperature, pH, Flow, Precipitation, and Production - The pH limitation in the proposed permit has not been changed from the existing allowance of 7.0 to 10.0 at all times with some excursions between 6.0 to 7.0 and 10.0 to 11.0 being allowed. The proposed limitations are based on BPJ and use the NSPS limitations specified in 40 CFR Part 421.24 as amended at 52 FR 25558, July 7, 1987. Excursions between 6.0 to 7.0 and 10.0 to 11.0 shall be allowed, per 40 CFR Part 401.17, provided no single excursion exceeds sixty (60) minutes in length and total excursions do not exceed seven hours and twenty-six minutes per month. Any excursion below 6.0 above 11.0 shall be considered a violation. In addition to continuously monitoring pH at the final outfall, Goldendale shall continuously monitor and report pH at the inlet to C Pond as an additional measure to ensure against unexpected or unauthorized discharges. The proposed permit carries forward the existing monitoring requirements for temperature, flow, precipitation, and production.

Table 1. Proposed Effluent Limits and Monitoring Requirements for Outfall 001: Industrial Wastewater and Stormwater Runoff Discharge from the Settling Lagoons into the Columbia River.

<u>Parameter</u>	<u>Effluent Limits</u>		<u>Monitoring Requirements</u>	
	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Aluminum	18.0 lbs/day	40.0 lbs/day	at least 1/wk	24-hour Comp. Total
Suspended Solids (TSS)	103 lbs/day	411 lbs/day	at least 3/wk	24-hour Comp.
Fluoride	160 lbs/day	350 lbs/day	at least 3/wk	24-hour Comp
Oil & Grease	NA	NA	at least 1/wk	Grab
Benzo (a)pyrene				
B(a)P	0.05 lbs/day	0.10 lbs/day	at least 1/wk	Composite
Antimony	5.6 lbs/day	12.6 lbs/day	at least 1/wk	24-hour Comp.
Nickel	2.4 lbs/day	3.6 lbs/day	at least 1/wk	24-hour Comp.
Arsenic			at least 1/mo	24-hour Comp.
pH (a)	7.0 to 10.0 at all times *		Continuous	Continuous
Temperature °F			Continuous	Continuous
Flow, MGD			Continuous	Continuous
Precipitation, inches as rain			Daily	24-hour Sample
Production (b)				
Aluminum metal production, tons/day			Daily	Average
Anode production, tons/day			Daily	Average
Direct Chill Casting production, tons/day			Daily	Average

The Permittee may subtract the amount of pollutants present in their intake water as determined by daily analysis from the amount present in their discharge water before reporting.

The Permittee may request a reduction in arsenic monitoring after one year of

monitoring upon written approval of the Ecology. The expectation is that arsenic monitoring results will show little variation.

Table 1. Proposed Effluent Limits and Monitoring Requirements for Outfall 001A: Industrial Wastewater Treatment Plant (WTP) Secondary Roof Scrubber Discharge into Outfall 001 Discharge System sampled at the sand filter discharge:

Parameter	Effluent Limits		Monitoring Requirements	
	Monthly <u>Average</u>	Daily <u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
TSS	50.0 lbs/day	100.0 lbs/day	daily	24-hour Comp.
B(a)P	0.03 lbs/day	0.06 lbs/day	at least 1/wk	24-hour Comp.
Flow MGD	NA	NA	Continuous	Continuous
Fluoride in mg/l (note 1)	NA	NA	daily	24-hour Comp.

Note 1: After at least one year of monitoring history, the Permittee may request a modification of monitoring requirements. Based on the monitoring history, Ecology may establish mass loading and/or concentration limits.

#### Discharge and Monitoring Definitions and Explanations

- Monthly average is defined as the sum of all daily discharges divided by the number of daily discharges measured during the calendar month.
- Daily maximum is defined as the highest allowable daily discharge during the calendar month.
- 24-hour Composite is defined as a 24 hour flow or time proportional sample, whichever is most representative of the discharge.
- At least 1/wk is defined as at least one sample collected during each sequential Sunday through following Saturday.
- Metals analysis shall be as total recoverable.

The following equipment shall be used at each composite collection station: 1) teflon or stainless steel tubing, and 2) priority pollutant approved one to two gallon glass jars with teflon-lined lids. The composited sample shall be refrigerated at 4 °C in the dark during collection.

- (a) In addition to monitoring pH continuously at the final discharge point (outfall 001), the Permittee shall monitor pH continuously at the inlet to C Pond. The pH at the inlet to C Pond shall be reported monthly.
- (b) Production daily average is defined as the total calendar monthly production divided by the actual production days during that month.
- \* pH limitation is 7.0 to 10.0 at all times with some excursions between 6.0 to 7.0 and 10.0 to 11.0 being allowed. Excursions between 6.0 to 7.0 and 10.0 to 11.0 shall be allowed provided no single excursion exceeds 60 minutes in length and total excursions do not



exceed 7 hours and 26 minutes per month. Any excursion below 6.0 or above 11.0 shall be considered violations.

Table 1. Proposed Effluent Limits and Monitoring Requirements for Outfall OO1B: Sanitary Treatment Wastewater Plant Discharge into the Outfall 001 Discharge System

<u>Parameter</u>	EFFLUENT LIMITS		MONITORING REQUIREMENTS	
	30-Day Average	7-Day Average	Frequency	Sample Type
Biochemical Oxygen Demand (5-day BOD)	25.0mg/l (a)	45.0 mg/l	Weekly	24-hour Composite (b)
TOTAL SUSPENDED SOLIDS (TSS)	30.0 MG/L (A)	45.0 MG/L	WEEKLY	24-HOUR COMPOSITE
RESIDUAL CHLORINE (LIMIT IN EFFECT UNTIL 18 MONTH STUDY COMPLETED WHICH TRIGGERS FOLLOWING LIMIT)	0.1 MG/L TO 2.5 MG/L		DAILY (5/WEEK)	GRAB
RESIDUAL CHLORINE (c) limit in effect 18 months after effective date of permit	0.5 MG/L		0.75 MG/L	DAILY (5/WEEK) GRAB
FECAL COLIFORM	200/100 ML	400/100 ML	WEEKLY	GRAB
pH	6.0 to 9.0 at all times (d)		Continuous	Continuous
Flow, MGD			Continuous	Continuous

Discharge and Monitoring Explanations

- (a) In addition, the 30-day average percent removals of BOD and TSS shall not be less than eighty-five percent of influent concentrations. A grab sample may be used in collecting the sanitary plant influent for determination of the eighty-five percent removal criteria. The influent BOD and TSS samples shall be collected twice per week along with the 24-hour composite samples.
- (b) The composited BOD sample shall be refrigerated at 4 °C in the dark during collection.
- (c) Permittee shall implement, within 18 months of the permit effective permit issuance date, a method of disinfection which meets permit chlorine residual limitations. If a non-chlorine based method of disinfection is implemented, then the final residual chlorine limits and monitoring requirements are eliminated. If non-chlorine based method of disinfection is implemented, Permittee shall implement any necessary operational changes to assure adequate disinfection during periods of maintenance. Operational changes may include but are not limited to effluent retention, bulb redundancy, or additional wattage capacity.

- (d) pH limitation is 6.0 to 9.0 at all times with some excursions between 5.0 and 6.0, and 9.0 and 10.0 being allowed. Excursions between 5.0 and 6.0 and 9.0 and 10.0 shall be allowed provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 26 minutes per month. Any excursions below 5.0 and above 10.0 shall be considered violations.

## **MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

### *EFFLUENT LIMITS BELOW QUANTITATION*

The Quantitation Level is the level at which concentrations can be reliably reported with a specified level of error. For maximum daily effluent limits, if the measured effluent concentration is below the Quantitation Level, the Permittee reports NQ for non-quantifiable. For average monthly effluent limits, all effluent concentrations below the Quantitation Level but above the Method Detection Level are used as reported for calculating the average monthly value.

### *EFFLUENT LIMITS BELOW DETECTION*

The Method Detection Level (MDL) is the minimum concentration of an analyte that can be measured and reported with a 99 percent confidence that its concentration is greater than zero as determined by a specific laboratory method. For maximum daily limits, if the concentrations are below the MDL the Permittee reports ND for non-detectable. For average monthly limits, all values above the MDL are used as reported and all values below the MDL are calculated as zero.

### *LAB ACCREDITATION*

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*.

## **OTHER PERMIT CONDITIONS**

### *REPORTING AND RECORDKEEPING*

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

### *NON-ROUTINE AND UNANTICIPATED DISCHARGES*

Occasionally, this facility may generate wastewater which is not characterized in their permit application because it is not a routine discharge and was not anticipated at the time of application. These typically are waters used to pressure test storage tanks or fire water systems or leaks from drinking water systems. These are typically clean waste waters but may be contaminated with pollutants. The permit contains an authorization for non-routine and unanticipated discharges. The permit requires a characterization of these waste waters for pollutants and examination of the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and opportunities for reuse, Ecology may authorize a direct discharge via the process wastewater outfall or through a stormwater outfall for clean water, require the wastewater to be placed through the facilities wastewater treatment process or require the water to be reused.

### *SPILL PLAN*

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The proposed permit requires the Permittee to develop and implement a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

### *SOLID WASTE PLAN*

The Department has determined that the Permittee has a potential to cause pollution of the waters of the state from leachate of solid waste.

This proposed permit requires, under authority of RCW 90.48.080, that the Permittee develop a solid waste plan to prevent solid waste from causing pollution of waters of the state. The plan must be submitted to the local permitting agency for approval, if necessary, and to the Department.

This proposed permit requires, under the authority of RCW 90.48.080, that the Permittee update the solid waste plan designed to prevent solid waste from causing pollution of the waters of the state. The plan must be submitted to the local permitting agency for approval, if necessary, and to the Department.

### *EFFLUENT MIXING STUDY*

The Department has estimated the amount of mixing of the discharge within the authorized mixing zone to determine the potential for violations of the Water Quality Standards for Surface Waters (Chapter 173-201A WAC). No violation of Water Quality Standards or Human Health Criteria are expected at anticipated pollutant concentrations.



### *OUTFALL EVALUATION*

Proposed permit requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

### *TREATMENT SYSTEM OPERATING PLAN*

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain the treatment system (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g). An operation and maintenance manual was submitted as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). It has been determined that the implementation of the procedures in the Treatment System Operating Plan is a reasonable measure to ensure compliance with the terms and limitations in the permit.

### *PRIORITY POLLUTANT TESTING*

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that Goldendale's discharge is unlikely to contain organic chemicals regulated for human health and does not contain most chemicals of concern based on several priority pollutant scans and our knowledge of the industry. A worst case analysis of the discharge using the available mixing zone and the detection limit of the analysis showed some parameters, which if present at the detection limit would exceed human health criteria at the edge of the mixing zone (see Appendix C). These parameters, with the exception of arsenic, were not detected and are highly unlikely to be present in this discharge considering the nature of the industry inputs. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

### *GENERAL CONDITIONS*

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

## **PERMIT ISSUANCE PROCEDURES**

### *PERMIT MODIFICATIONS*

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

*RECOMMENDATION FOR PERMIT ISSUANCE*

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this proposed permit be issued for 5 years.

**REFERENCES FOR TEXT AND APPENDICES**

Environmental Protection Agency (EPA)

- 1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
- 1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
- 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
- 1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
- 1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C. Tsivoglou, E.C., and J.R. Wallace.
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- 1994. Washington State Department of Ecology. Permit Writer's Manual. Publication Number 92-109 Wright, R.M., and A.J. McDonnell.
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## APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department is proposing to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

The Department will publish a Public Notice of Draft (PNOD) on February 5, 2002 in the Goldendale Sentinel to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Attn: Robert Carruthers  
Industrial Section  
Department of Ecology  
PO Box 47706  
Olympia, WA 98504-7706

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, **(360) 407-6954**, or by writing to the address listed above.

This permit and fact sheet were written by **Robert Carruthers**.

## **APPENDIX B--GLOSSARY**

**Acute Toxicity**--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

**AKART**-- An acronym for “all known, available, and reasonable methods of treatment”.

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation** --The average of the measured values obtained over a calendar month's time.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Chronic Toxicity**--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring** --Uninterrupted, unless otherwise noted in the permit.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Dilution Factor**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

**Engineering Report**--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over a short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Major Facility**--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**Minor Facility**--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Mixing Zone**--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Responsible Corporate Officer**-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

## **APPENDIX C--TECHNICAL CALCULATIONS**

Appendix C consists of two Excel spreadsheets used to evaluate the potential to violate water quality standards and human health criteria. The Excel spreadsheets are respectively titled, “human3.xls” and “water.xls”.



## **APPENDIX D--RESPONSE TO COMMENTS**

The only comments received during the public comment period (April 5 through March 7, 2002) were from the Permittee (Goldendale). Goldendale's comments and Ecology's responses are provided below.

Background Information on Permit Condition S1.F: Portions of the Columbia are considered "temperature impaired" because ambient temperature occasionally exceeds 20 C. This is the temperature standard established as a water quality criteria by WAC 173-201A-130 for the Columbia River at Goldendale. The temperature standard also includes allowances for human caused increases when the natural temperature is greater than 20 degrees C. Goldendale's effluent occasionally can exceed 20 C. EPA is currently conducting a TMDL effort regarding Columbia River temperature. Ecology has taken a policy position which would require either a temperature limit or a study of effluent temperature impact where a discharger's effluent has a "reasonable potential" to cause a violation of water quality criteria. Condition S1.F would require a temperature study to evaluate the ambient river temperature.

Goldendale Comment 1. The temperature study should be deleted from the permit for a number of reasons including:

1. Goldendale Aluminum is an insignificant source of heat to the Columbia River.
  2. The Department of Ecology is revising their 303(d) listing program policy, and will be preparing a new 303(d) list in 2002 and 2003.
  3. The Department of Ecology is considering modifications to the temperature standards.
  4. EPA is working on a Temperature TMDL for the Columbia River.
  5. The current temperature study permit wording was developed about a year ago and would benefit substantially from revisions based on recent and ongoing developments.
  6. The study requirements to address concerns about lethality due to temperature caused by potential entrainment of fish are not necessary.
- Municipalities with similar thermal loadings are not required to do similar studies.

The above issues will be discussed further below. Because of the above issues, it makes sense to not impose a temperature study in the permit. Because Goldendale Aluminum is an insignificant source, no study should be required. However, if Ecology is insistent on a study, then at some point in the future, a study could be required through an administrative order and the requirements of the study could be written to benefit from any changes to the standards, the 303(d) listing program policy, the 303(d) list, as well as any new information gained from the EPA Temperature TMDL modeling and the studies that are being undertaken by the pulp and paper mills.

Another alternative to deleting the study completely would be to simply have a place holder in the permit, much like for the sediment studies in Section S1.C, leaving the submittal dates unspecified, and the actual study requirements unspecified.

Goldendale Aluminum is an insignificant source of heat to the Columbia River.

The fact sheet notes that the 7Q10 flow for the Columbia near Goldendale Aluminum is 79,000 cfs and the upper 90th percentile receiving water temperature is 21 degrees C (Fact Sheet at page 7). The fact sheet notes that the highest monthly average effluent temperature for the January 1997 to December 1999 period was 23.9 degrees C (Fact Sheet at page 8). The information came from the Goldendale Aluminum mixing zone study prepared by ENSR and submitted to Ecology. The mixing zone study showed that the highest monthly average daily flow was 10.53 mgd (16.29 cfs) (Mixing Zone Study at page 2-4).

The calculated temperature increase to the Columbia River is:

$$[((16.29 \times 23.9) + (79,000 \times 21)) / (79,016.29)] - 21 = 0.0006 \text{ degrees C}$$

The temperature standard for this stretch of the Columbia River allows a 0.3 degree C increase from human causes above the natural temperature when the natural temperature exceeds 20 degrees C (WAC 173-201A-130(20)). A 0.0006 degrees C increase is insignificant, cannot be measured and would be lost in the natural temperature variability that occurs. Goldendale Aluminum's effluent accounts for only 0.2 % of the allowable 0.3 degree C change. Temperature is not a conservative pollutant. Goldendale Aluminum's temperature contribution does not persist indefinitely because the Columbia River strives to attain its thermal equilibrium.

This is a sufficient demonstration that there is no need for Goldendale Aluminum to conduct further temperature studies. Because Goldendale Aluminum is such a minor source of heat, Ecology should remove the temperature study requirement from the permit.

The Department of Ecology is revising their 303(d) listing program policy, and will be preparing a new 303(d) list in 2002 and 2003.

The Temperature Characterization requirements in Goldendale Aluminum's permit state that:

The data will be used to determine if the river is impaired for temperature, therefore the collection protocol shall be consistent with sections "4. Considerations for Data Quality and Evaluation" and "5. Criteria Used to Determine Current Water Quality Limited Segments" in the latest version (2001 revision) of the Departments Water Quality Program Policy 1-11 "Assessment of Water Quality for the Section 303(d) List."

Ecology is currently proposing substantial revisions to that policy in response to changes made by EPA, so the references are not relevant. The final form of the Policy is still not known but the current draft can be found at:

[http://www.ecy.wa.gov/programs/wq/partnership/03\\_07\\_02/listpolicydraftfinal5.pdf](http://www.ecy.wa.gov/programs/wq/partnership/03_07_02/listpolicydraftfinal5.pdf).

The draft revisions include significant provisions for assessment of the natural conditions. The problem is, the study called for in Goldendale Aluminum's permit will be incapable of identifying the natural conditions. Ecology currently lacks sufficient guidance or experience regarding how to make such determinations. The issue of how to consider the natural conditions

for temperature in the next 303(d) listing process is one that is actively being evaluated now. Ecology personnel have expressed concern that they do not want to list waterbodies where the exceedences are natural.

Before Goldendale Aluminum is assigned a temperature study requirement, Ecology must determine how such a study can identify the natural temperature condition. Such an understanding is a clear component of the state's standard. Absent that understanding, the study has limited value. It makes sense to delay imposing a study requirement until the listing policy is revised. It may even make sense to delay imposing a study requirement until the next 303(d) list is developed. That list may have the benefit of a number of related activities that could all bear on the need for a temperature study and the design of such study if needed.

The Department of Ecology is considering modifications to the temperature standards.

Ecology is proposing changes to the water quality standards from a class-based approach to a use based approach. For freshwater, various salmonid uses are an essential component of the proposed changes, and includes the development of numerous different specific temperature criteria for different species and life stages of salmonids. However, river segments that have site specific temperature standards already adopted in the present standards will have those site specific standards continued in the revisions (Personal communication between Mark Hicks of Ecology and Lincoln Loehr of Heller Ehrman on January 23, 2002 at the facilitated workgroup meeting concerning revisions to the state's water quality standards).

The Columbia River by Goldendale Aluminum has a site-specific temperature standard at WAC 173-201A-130(20). Therefore, the new numeric temperature standards that Ecology will be adopting will not pertain to the Columbia River by Goldendale Aluminum.

The state's efforts at revising the temperature standards are occurring as EPA is also proposing regional temperature criteria for the Northwest states. EPA's approach is much more stringent than the state's approach. There are numerous issues between the state and EPA that still need to be worked through and the federal fishery resource agencies intend to have a say in what the state does.

It makes sense to not define the temperature study requirements for Goldendale Aluminum until the temperature standards issues with Ecology and EPA have been resolved.

EPA is working on a Temperature TMDL for the Columbia River.

EPA Region 10 is conducting extensive modeling and is preparing a temperature TMDL for the Columbia River. EPA is conducting workshops on March 25 and 26 addressing the issues of loading capacity and allocations. Earlier workshops had presented the results of their modeling efforts. EPA intends to have a draft TMDL for temperature for the Columbia River completed by the Spring of 2002, and to adopt a final TMDL by the end of 2002.

EPA recognizes that the state standards for the Columbia and Snake Rivers include allowances for natural conditions and human caused increases above the natural. EPA is using modeling to

better understand the natural temperature of the river. EPA has examined historical temperature data as well as modeled a ten-year period using river flow and climatological data. The ten-year period has been modeled assuming that all the dams were in place and also assuming that all dams were removed. The modeling identifies shifts in the thermal regime of the river, but also identifies that the natural condition without the dams will have similar exceedences of the numeric temperature standards. In the case of the Snake River at Ice Harbor dam, the modeling showed warmer temperatures existed without the dams than with the dams. The attached figure is from the EPA modeling effort.

With the exception of the Snake River, EPA has determined that tributary temperatures have no effect on the river temperature. EPA has acknowledged that point source discharges may be similar to tributaries (e.g., they have no effect). Point source temperatures may be greater than tributaries, but their flows are less, and EPA understands that the total BTU loading may be insignificant in either case. (Rick Parkin, EPA Region 10, Temperature TMDL Informational Workshop held in Portland on July 24, 2001.) EPA will probably address what they might (or might not) be able to do with the effects from the dams, and will either provide for some attainable allocation to point sources, or simply have the states permit the point sources with consideration of the allowable increases in the standards as applied at the edge of mixing zones.

The current temperature study permit wording was developed about a year ago and would benefit substantially from revisions based on recent and ongoing developments.

The study requirements do not make sense because the study cannot identify what the natural conditions are. Therefore it is incapable of making a determination whether the water should or should not be listed on the 303(d) list. Lincoln Loehr discussed the permit language with Rick Parkin of EPA and Mr. Parkin agreed that the study would be incapable of determining if the river is impaired for temperature because it could not determine the natural temperature. Mr. Parkin is the person in charge of developing EPA Region 10's temperature TMDL for the Columbia and Snake Rivers. Mr. Parkin agreed that some data from the proposed study could have been useful to the TMDL if it was available sooner. Given EPA's timetable for finishing the TMDL by the end of this year, the data will have no utility to the TMDL (Mr. Parkin's phone number is (206) 553-8574).

The need of the study to identify whether or not the river should be listed on the 303(d) list might be answered within the year by EPA's TMDL and by decisions made in the state's 2002 303(d) list (scheduled for completion in mid 2003). Because Goldendale Aluminum is not even operational at the moment, it is impossible for Goldendale Aluminum to conduct a meaningful study that Ecology could use in developing the 2002 303(d) list and the next list after that is not developed until 2006.

It may be possible to learn something from the temperature studies that the pulp and paper mills are conducting, such that the study needs could be refined before Goldendale Aluminum undertakes studies.

It makes sense to delete the temperature study from the permit. Ecology can evaluate the information being developed by these other programs and studies and determine in a couple of

years whether a temperature study by Goldendale Aluminum is needed. Such a study would probably look different than what is in the permit, and it could be imposed outside of the permit.

The study requirements to address concerns about lethality due to temperature caused by potential entrainment of fish are not necessary.

As noted in the fact sheet for the permit, the highest monthly average temperature for Goldendale Aluminum's effluent from 1997 to 1999 was 23.9 degrees C. The mixing zone study prepared by ENSR and submitted to Ecology also provided temperature data for the period 1994 to 1996 and in that time frame, the highest recorded daily effluent temperature was 28 degrees C. This temperature is not a concern for lethality to fish.

Ecology is addressing the issue of lethality to fish from warm effluents in the revisions to the water quality standards. The present proposed wording from Ecology is that an effluent must be below 33 degrees C after 1 or 2 seconds of dilution. Hence, the hottest observed effluent was still well below the 33 degree C lethality criteria.

The dilution modeling presented in the ENSR study showed that initial near field mixing occurred rapidly. Although the model printout did not provide the time between each dilution step, it did provide the time for some stages of the dilution. The effluent concentration was reduced to 9.6% within five seconds (ENSR Study, Appendix E).

Because the effluent is less than 33 degrees, and also because the initial mixing is quite rapid, there is no need for a temperature characterization study to address the concerns about lethality due to temperature from potential entrainment of fish in the effluent plume.

Municipalities with similar thermal loadings are not required to do similar studies.

The City of Vancouver has two treatment plants discharging to the Columbia River. The Westside Plant received its NPDES permit on August 20, 2001. The Fact Sheet acknowledges temperature issues on the Columbia River, an effluent dry weather flow of 16 mgd, a receiving water critical condition temperature of 21.6 degrees C and a highest effluent temperature of 24.2 degrees C. The Fact Sheet also acknowledges an inability to evaluate whether the natural temperature has been exceeded by all sources by more than 0.3 degrees C. The permit only requires the City to do a one time sampling of the ambient water during the critical low flow period. Because the City has two separate treatment plants, the BTU loadings from the City will probably be greater than the BTU loading from Goldendale Aluminum.

**Ecology Response to Comment 1. General comments on temperature study - the current TMDL and 303(d) listing guidance dated 12/24/01 allows two options for permitting existing discharges to a 303(d) listed water body with no TMDL. These options are 1) to have the discharger conduct a temperature study in the vicinity of the discharge to determine if that section of the Columbia River is impaired and thus different than the 303(d) listing for the river as a whole, or 2) include a performance-based interim limit in the permit with a reference to a final limit in the fact sheet that would be imposed on the discharge depending on the outcome of the TMDL.**

**Because Goldendale's discharge is less significant than some of the other discharges to the Columbia River, namely the pulp and paper mills, Ecology is willing to scale back the temperature study that is currently included in their draft permit. If Goldendale would prefer to have an interim temperature limit that is performance-based, this limit would either be calculated using the 95th and 99th percentile analysis or another methodology that we would work out.**

**Specific responses to components of Goldendale's comments are as follows:**

- Goldendale is an insignificant source of heat to the Columbia River - there is no de minimus concept in the regulation. If the temperature of their discharge is greater than the WQ standard for the Columbia River, we have to implement the TMDL and 303(d) listing guidance as discussed above.**
- Ecology is revising their 303(d) listing policy and will be preparing a new 303(d) list - we have to use the current policy that is in effect when we are issuing permits.**
- Ecology is considering modifications to the temperature standard - again, we have to compare to the temperature standard in effect when we are issuing permits and right now all indications are that the temperature standard is more likely to go down than up when it is modified.**
- EPA is working on a TMDL for the Columbia River - that is why the current policy is structured the way it is; to either collect site specific data now to show that the 303(d) listing is not applicable in the vicinity of Goldendale's discharge or to be limited to current temperature conditions until we know the outcome of the TMDL.**
- The temperature study permit wording in the draft permit would benefit substantially from revisions based upon recent and ongoing developments - we agree and have made substantial changes to the wording of the study in the final permit.**
- The study requirements to address concerns about lethality due to temperature are not necessary - we agree that this is not necessary for Goldendale and have taken it out of the final wording.**

**Municipalities with similar thermal loadings are not required to do similar studies - Ecology is implementing this guidance now in permits that are affected by the 303(d) listing.**

Goldendale Comment 2. Page 1 – Issue date, Effective date, and Expiration date.

Goldendale Aluminum requests the permit effective date begin on the first day of the next calendar month following the permit issue date. The first day of the month effective date will make for an easy transition to the new permit effluent limits, e.g., outfall 001 TSS. The draft permit lists a 2006 expiration date. Goldendale Aluminum requests a full five-year permit term with an expiration date to the year 2007.



**Ecology Response. Ecology will make the changes as requested.**

Goldendale Comment 3. Page 4 – Summary of Permit Report Submittals.

The temperature characterization reporting requirements should be deleted for the reasons described in General Comment 1.

The priority pollutant testing reporting requirements should be amended to twice during the permit term. Please see Specific Comment 12 below.

The treatment system O&M manual reporting requirements should be deleted. Please see Specific Comment 13 below.

The stormwater pollution prevention plan (SWPPP) reporting requirements should be deleted. Please see Specific Comment 15 below.

**Ecology Response. Goldendale makes comments on the specific permit conditions later on in their comments. Ecology has responded to each specific comment made.**

Goldendale Comment 4. Page 6 – Section S1.A – General Limitations and Allowances.

Change the second paragraph to read:

The discharge of any of the following pollutants more frequently than, or at a level in excess of that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

The term “more frequently than” does not apply.

**Ecology Response. Ecology has made the requested change.**

Goldendale Comment 5. Page 7 – Section S1.B1 - Production Reporting.

Please delete “Daily” from under the “Frequency” column and insert “Daily” in the “Sample Type” column. The “Sample Type” monitoring requirement would read: “Daily Average.”

**Ecology Response. Ecology has not made the requested change as the column headings are not thought to be confusing.**

Goldendale Comment 6. Page 9 – Section S1.B2 – pH limit for Outfall 001.

The footnote concerning the pH limitation (for Outfall 001) needs to be corrected. The second sentence should read as follows:

Excursions between 6.0 and 7.0, and 10.0 and 11.0 shall be allowed provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 26 minutes in length and total excursions do not exceed 7 hours and 26 minutes per month.

**Ecology Response. Ecology has made the requested change.**

Goldendale Comment 7. Page 9 – Section S1.B3 – Residual Chlorine limits for Outfall 001B.

Goldendale Aluminum intends to convert to UV disinfection and remove the disinfection system. The permit at page 10 states “Goldendale Aluminum shall implement, within 18 months of effective permit issuance date, method of disinfection which meets permit chlorine residual limitations.” The fact sheet at page 13 notes that the permittee may seek a permit modification if a method of disinfection that does not use chlorine is implemented. Goldendale Aluminum believes including a provision in the permit that eliminates the residual chlorine limit and monitoring requirement when a non-chlorine based disinfection method is implemented could eliminate this administrative step. This could be accomplished by modifying footnote (c) to Section S1.B3 as follows:

Permittee shall implement, within 18 months of the permit effective permit issuance date, method of disinfection which meets permit chlorine residual limitations. If a non-chlorine based method of disinfection is implemented, then the final residual chlorine limits and monitoring requirements are eliminated.

**Ecology Response. Ecology has made the requested change. Additional changes have also been made in anticipation of a change to a UV system of disinfection. The changes are designed to require the Permittee to make operational changes such that periodic system maintenance can be conducted while adequate disinfection still occurs.**

Goldendale Comment 8. Page 9 – Section S1.B3 – pH limit for outfall 001B.

Because the pH monitoring for the sanitary treatment wastewater plant discharge is continuous (the current permit monitoring was a daily grab sample), it should have a footnote to allow for excursions similar to the footnote in Section S1.B2 that pertains to outfall 001, but adjusted to reflect the 6.0 to 9.0 range of the limit. Suggested wording is as follows:

pH limitation is 6.0 to 9.0 at all times with some excursions between 5.0 and 6.0, and 9.0 and 10.0 being allowed. Excursions between 5.0 and 6.0 and 10.0 and 11.0 shall be allowed provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 26 minutes per month. Any excursions below 5.0 and above 10.0 shall be considered violations.

**Ecology Response. Ecology has made the requested change except that the upper pH limit has been set at 10 rather than 11 as requested.**

Goldendale Comment 9. Page 10 – Section S1.E.I.b.7 and 8 – Acute Toxicity Sampling and Reporting Requirements.

Delete subsection S1.E.I.b.7 and revise subsection 8 as follows:

All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing and do not comply with the acute statistical power standard of 29% as defined in WAC 173-205-020 must be repeated on a fresh sample with an increased number of replicates to increase the power.



The deletion of subsection 7 is needed because the section is boilerplate language that pertains specifically to compliance monitoring when there is an acute toxicity effluent limit. Because past characterization of Goldendale Aluminum's effluent showed there was no need for an acute toxicity limit (Fact Sheet at page 10) this permit only requires acute WET characterization. Since there is no acute WET limit, there is no associated compliance monitoring requirement. The changes to the boilerplate language in subsection 8 reflect the fact that there are no requirements in the permit for effluent screening tests or rapid screening tests for acute toxicity.

**Ecology Response. The requested change has not been made. The permit condition wording is generic to many permits. Its inclusion, while not applicable to Goldendale, does not affect Goldendale.**

Goldendale Comment 10. Page 15 - Section S1.E.II.e - Monitoring When There Is No Permit Limit for Chronic Toxicity.

Delete the second paragraph that appears to be an option presented to the permit writer in Ecology's permit shell that does not appear to be applicable to Goldendale Aluminum Company.

**Ecology Response. Ecology has made the requested change.**

Goldendale Comment 11. Page 15 - Section S1.E.II.f - Sampling and Reporting Requirements.

Adjust the formatting and underline the title line to this subsection.

**Ecology Response. Ecology has made the requested change.**

Goldendale Comment 12. Page 16 - Section S1.F - Temperature Characterization.

Delete this section and re number the following Section S1.G to S1.F. The reasons why this section should be deleted are described in the General Comments.

**Ecology Response. Ecology has modified the Temperature Characterization requirement in response to points made by Goldendale but has not deleted the requirement.**

Goldendale Comment 13. Page 17 - Section S1.G - Priority Pollutant Testing.

Goldendale Aluminum requests a reduction of the annual testing to once during the first three years of the permit term. A second test will also be conducted as part of the permit renewal application during the permit's fifth and last year. Annual priority pollutant testing is expensive and Goldendale Aluminum believes its wastewater discharge does not have contamination levels or variability levels great enough to warrant the additional expense. Other permittees typically are only required to do priority pollutant testing once per permit cycle. Goldendale Aluminum concurs with the requirement that priority pollutant analysis is only required when Goldendale Aluminum is at "normal operations and flow regime." Goldendale Aluminum assumes that this means the analysis is not required until Goldendale Aluminum has resumed nearly full

production.

**Ecology Response.** Ecology has reduced the number of priority pollutant samples to 4/permit term, spaced at least 6 months apart. This should provide enough data to make a reasonable potential determination and to determine compliance with the WQ standards on an ongoing basis.

Goldendale Comment 14. Page 21 – Section S4.A - Treatment System Operating Plan.

Goldendale Aluminum requests that the department delete this condition. An Operational and Maintenance manual for the industrial wastewater treatment plant (WTP) was submitted to the department in October 2001 and fulfills this requirement. The WTP is the only active industrial treatment system on-site and it recently underwent a \$1.8 million modification. As an alternative to deleting the condition, the department could require that the WTP O&M manual be reviewed annually, and revised as necessary (similar to permit requirement S7. Spill Plan).

**Ecology's Response.** The requested change has not been made. Ecology acknowledges that the settling ponds are largely a passive system and that the most involved component of the overall effluent treatment process is the WTP. This can be reflected in an overall Treatment System Operating Plan based largely on the recent WTP plan which addresses the settling ponds as necessary.

Goldendale Comment 15. Page 24 - Section S6.A.4 - Non-Routine and Unanticipated Discharges.

In subsection 4, the third sentence states that

"The analysis shall also include hardness, any metals that are limited by water quality standards, and any other parameter deemed necessary by the Department."

What does the phrase "any metals that are limited by water quality standards" mean?

We recognize that this is boilerplate permit language, and perhaps it needs to be clarified for others as well as for us. We note that Goldendale Aluminum has no metals limits that are based on water quality standards and that this stretch of the Columbia River is not on the 303(d) list as limited for any metals. We also acknowledge that there are water quality standards for a number of metals and that Ecology probably means that the analysis called for in subsection 4 applies to those. If that is the case, then the sentence should be changed to read as follows:

"The analysis shall also include hardness, those metals for which there are state water quality standards in WAC 173-201A-040(3), and any other parameter deemed necessary by the Department."

**Ecology Response.** Ecology has adopted the clarifications proposed by Goldendale.

Goldendale Comment 16. Page 25 – Section S10. Stormwater Pollution Prevention (SWPPP)

Goldendale Aluminum requests that the department delete this requirement. Goldendale Aluminum simply does not believe this “one-size fits all” permit condition would provide any meaningful environmental improvement to Goldendale Aluminum’s discharge. We believe the requirement, while warranted for uncontrolled separate stormwater discharge streams, is not warranted for our combined process, cooling water, sanitary, and stormwater discharge. Goldendale already monitors our “combined discharge” daily. We currently discharge less than 2 lb/day aluminum, less than 8 lb/day oil & grease, and remove more than 450 lb/day TSS in our 7 MGD discharge to the Columbia River. There is simply very little “additional pollutant loading” reduction available through the implementation of a SWPPP.

Goldendale Aluminum has reviewed another recently issued NPDES permit by the Industrial Section (Longview Fibre) and notes that specifically permitted separate stormwater discharges through separate outfalls, without treatment, provided that the permittee complies with the permit provisions for a Stormwater Pollution Prevention Plan described in detail in another section of that permit. Hence, the requirement for a SWPPP was directly related to the permitting of their separate stormwater discharges. Since Goldendale Aluminum does not have separate stormwater discharges, all site stormwater receives treatment and all treated water is monitored, the provisions of Section S10. are not relevant or appropriate to include in Goldendale Aluminum’s permit.

Lastly, Goldendale Aluminum also notes that the fact sheet did not provide any discussion of the basis for including the SWPPP conditions in the permit.

Should the department decide to retain the SWPPP condition then please remove the underline language “and all ancillary activities which discharge to the Goldendale smelter.”

**Ecology Response. Ecology has slightly modified this condition in response to points made by Goldendale. The SWPPP is now required to cover only onsite activities at the Goldendale smelter. Requirements to address ancillary activities which discharge to the smelter were removed.**

Goldendale Comment 17. Page 35 - G24.A.4 and G24.B.4. - "Notification Levels".

This general permit condition requires the Permittee to notify the Department as soon as they know or have reason to believe that any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, or on a non-routine or infrequent basis, of a toxic pollutant not limited in this permit if it will exceed the highest of a number of different notification levels. One of the notification levels in these sections is "[t]he level established by the Director in accordance with 40 CFR 122.44(f)."

Please advise Goldendale Aluminum as to where these notification levels may be found. A suggestion to improve the boilerplate general conditions language would be to clearly specify where the notification levels established in accordance with 40 CFR 122.44(f) may be found.

**Ecology Response.** Ecology admits this federal regulation reads in a circular and confusing manner but it is not at the state's discretion to modify a federal regulation. Ecology believes this regulation intends to act as a placeholder should new or different notification levels be established. It is rare that the Department establishes notification levels pursuant to this section. If notification levels were established pursuant to the cited regulation it would be the federal or state responsibility to let Goldendale know. If the Department has not established anything different, defer to the notification levels referenced in 40 CFR 122.42(a)(i), (ii), and (iii).

Specific comments re Fact Sheet for Permit No. WA 000054-0

Goldendale Comment 1. Page 8.

The response to comments needs to acknowledge that the discussion regarding Temperature is modified as per changes implemented in the final permit.

**Ecology Response.** Ecology has modified the Fact Sheet discussion on temperature to reflect modifications to the permit temperature study.

Goldendale Comment 2. Page 13.

Please correct sanitary plant discharge volume to 0.03 MGD from 0.2 MGD. The sanitary treatment plant has never approached a daily discharge of 200,000 gallons and if it did, it would severely exceed the plant's hydraulic loading capacity.

**Ecology Response.** Ecology has made the requested correction.

Goldendale Comment 3. Page 19.

The monitoring requirements for pH for outfall 001B should be "continuous" instead of "daily" and "grab", and a footnote should be added that allows for variability when measuring pH with continuous monitors.

**Ecology Response.** Ecology has made the requested changes.

Goldendale Comment 4.

Page 19 – Table 1. Sanitary Treatment Plant Limits and Monitoring Requirements. Please amend table to be consistent with the permit residual chlorine limits and monitoring requirements. The footnote (c), as amended and included in the permit should be added to the fact sheet.

**Ecology Response.** Ecology has made the requested changes.